Preface

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Version 1.0B

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Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation

Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matériel brouilieur du Canada.

About the Manual

The manual consists of the following:

Chapter 1

Introducing the Motherboard

Describes features of the motherboard.

Go to ⇨ page 1

Chapter 2

Installing the Motherboard

Describes installation of motherboard components.

Go to ⇨ page 7

Chapter 3

Using BIOS

Provides information on using the BIOS Setup Utility.

Go to ⇨ page 27

Chapter 4

Using the Motherboard Software

Describes the motherboard software

Go to ⇨ page 47

Chapter 5

Intel® Matrix Storage Manager RAID Configurations

Describes the Intel® Matrix Storage Manager RAID Configurations

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Trouble Shooting

Provides basic troubleshooting tips

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Chapter 1
Introducing the Motherboard

Introduction

Thank you for choosing the P55H-CM motherboard. This motherboard is a high performance, enhanced function motherboard designed to support the LGA1156 socket for Intel® Lynnfield processor for high-end business or personal desktop markets.

This motherboard is based on Intel® P55 Express Chipset for best desktop platform solution. P55 is a single-chip, highly integrated, high performance Hyper-Threading peripheral controller, unmatched by any other single chip-device controller. This motherboard supports up to 16 GB of system memory with dual channel DDR3 1333/1066 MHz. One PCI slot is supported, fully compliant with PCI rev 2.3 specification at 33MHz. High resolution graphics via one PCI Express slot, intended for Graphics Interface, is fully compliant to the PCI Express Base Specification revision 2.0. It implements an EHCI compliant interface that provides twelve USB 2.0 ports (six USB ports and three USB 2.0 headers support additional six USB ports). It supports Intel® Matrix Storage Technology, providing both AHCI and RAID 0, 1, 5 and 10 configuration.

The motherboard is equipped with advanced full set of I/O ports in the rear panel, including PS/2 mouse and keyboard connectors, LPT1, one LAN port, six USB ports, and audio jacks for microphone, line-in and line-out.

Feature

Processor

The motherboard uses an LGA1156 type of socket that carries the following features:

- Accommodates Intel® Lynnfield processor
- Supports “Hyper-Threading” technology CPU

“Hyper-Threading” technology enables the operating system into thinking it’s hooked up to two processors, allowing two threads to be run in parallel, both on separate “logical” processors within the same physical processor.

Chipset

The Intel P55 Express Chipset is a single-chip with proven reliability and performance.

- Support Intel® Matrix Storage Technology, providing both AHCI and RAID 0, 1, 5 and 10 configuration.
- One x16 PCI Express Gen2 ports each supporting up to 8 GB/s direction peak bandwidth
- Compliant with PCI Rev 2.3 interface at 33 MHz
- Integrated SATA 3.0 Gb/s Host Controller
- Twelve USB 2.0 ports supported
- Serial Peripheral Interface (SPI) support
- Enhanced DMA Controller, interrupt controller, and timer functions

Memory

- Supports DDR3 1333/1066 DDR3 SDRAM with Dual-channel architecture
- Accommodates four unbuffered DIMMs
- Up to 4 GB per DIMM with maximum memory size up to 16 GB
- Supports 1 Gb, 2 Gb and 4 Gb DDR3 DRAM technologies for x8 and x16 devices (It is not recommended to use 512 Mb DDR3 memory device on this motherboard)

Audio (optional)

• 5.1 Channel High Definition Audio Codec • ADCs support 44.1k/48k/96kHz sample rate • Meets Microsoft WLP 3.10 Vista premium and mobile PCs audio requirements • Direct Sound 3D™ compatible
• 5.1Channel High Definition Audio Codec • Exceeds Microsoft Windows Logo Program (WLP) Requirements • ADCs support 44.1K/48K/96K/192KHz sample rate • Power Support: Digital: 3.3V; Analog: 5.0V
• 7.1 + 2 channel High Definition Audio Codec • All DACs Support 192k/96k/48k/44.1kHz DAC sample rate • High –quality analog differential CD input • Meets Microsoft WHQL/WLP 3.0 audio requirements • Direct Sound 3D™ compatible

Onboard LAN

- IEEE 802.3 Ethernet interface for 1000BASE-T, 100BASE-TX and 10BASE-T applications
- Integrated 10/100/1000 transceiver
- Operates at half of the PCI Express Specification v1.1 speed

Expansion Options

The motherboard comes with the following expansion options:

- One PCI Express x16 slot for Graphic Interface
- Two PCI Express x1 slots
- One 32-bit PCI v2.3 compliant slot
- Six 7-pin SATA connectors
- One floppy disk drive interface

Integrated I/O

The motherboard has a full set of I/O ports and connectors:

- Two PS/2 ports for mouse and keyboard
- One LAN port
- Six USB ports
- One parallel port
- Audio jacks for microphone, line-in and line-out

BIOS Firmware

This motherboard uses AMI BIOS that enables users to configure many system features including the following:

- Power management
- Wake-up alarms
- CPU parameters
- CPU and memory timing

The firmware can also be used to set parameters for different processor clock speeds.

1. Some hardware specifications and software items are subject to change without prior notice.

2. Due to chipset limitation, we recommend that motherboard be operated in the ambiance between 0 and 50 ° C.

Specifications

CPU	• LGA1156 socket for latest Intel® Lynnfield processor • Supports “Hyper-Threading” technology CPU
Chipset	• Intel P55 Express Chipset
Memory	• Dual-channel DDR3 memory architecture • 4 x 240-pin DDR3 DIMM sockets support up to 16 GB • Supports DDR3 1333/1066/800 DDR3 SDRAM
Expansion Slots	• 1 x PCI Express Gen2 x16 slot • 2 x PCI Express x1 slots • 1 x PCI slot
Storage	• Supported by Intel P55 Express Chipset • 6 x Serial ATA 3.0 Gb/s Host Controllers • Supports RAID 0, 1, 5 and 10
Audio	• Realtek ALC 662 6CH HD audio (Colay ALC888/VIA VT1708B)
Giga LAN	• Intel 82578 Gigabit Lan Controller
Rear Panel I/O	• 1 x PS/2 keyboard & PS/2 mouse connector • 1 x parallel port • 6 x USB ports • 1 x RJ45 LAN connector • 1 x Audio port (Line in, microphone in, and line out)
Internal I/O Connectors & Headers	• 1 x 24-pin ATX Power Supply connector, 4-pin 12V connector • 6 x Serial ATA connectors • 1 x FDD connector • 1 x Case open header • 1 x Buzzer • 3 x USB 2.0 headers support additional 6 USB ports • 1 x Clear CMOS header • 1 x Front panel header • 2 x COM headers • 1 x SPDIF out header • 1 x Front panel audio header • 1 x TCM/TPM header • CPU_FAN/SYS_FAN/PWR_FAN connectors
System BIOS	• AMI BIOS with 16Mb SPI ROM • Supports Plug and Play 1.0A, APM 2.0, Multi Boot, DMI • Supports ACPI revision 3.0B specification
Form Factor	• Micro ATX Size, 244mm x 244mm

Motherboard Components

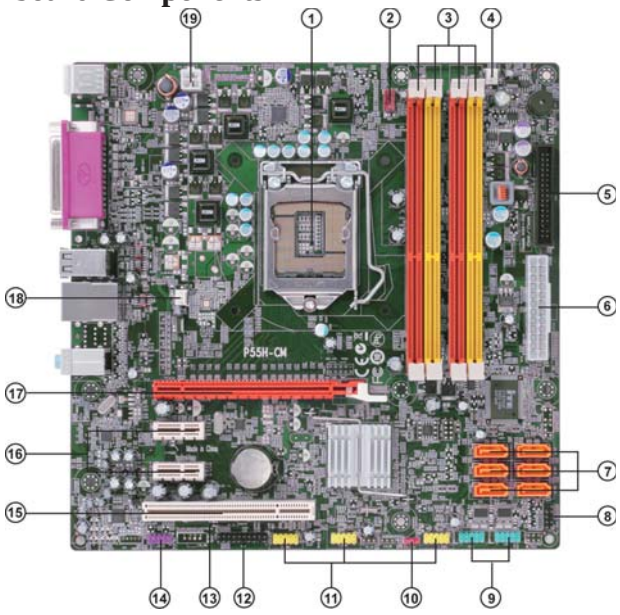


Table of Motherboard Components

LABEL	COMPONENTS
1. CPU Socket	LGA1156 socket for Intel® Lynnfield processor
2. CPU_FAN	CPU cooling fan connector
3. DIMM1~4	240-pin DDR3 SDRAM slots
4. PWR_FAN	Power cooling fan connector
5. FDD1	Floppy disk drive connector
6. ATX1	Standard 24-pin ATX power connector
7. SATA1~6	Serial ATA connectors
8. F_PANEL	Front panel switch/LED header
9. COM	Onboard serial port header
10. CLR_CMOS	Clear CMOS jumper
11. F_USB1~3	Front panel USB headers
12. TCM/TPM	Trusted Cryptography Module header/ TPM module header
13. SPDIFO	SPDIF out header
14. F_AUDIO1	Front panel audio header
15. PCI1	32-bit add-on card slot
16. PCIE1X-1~2	PCI Express x1 slots
17. PCIE16X	PCI Express slot for graphics interface
18. SYS_FAN	System cooling fan connector
19. ATX_12V	4-pin +12V power connector

This concludes Chapter 1. The next chapter explains how to install the motherboard.

Memo

Chapter 2
Installing the Motherboard

Safety Precautions

- Follow these safety precautions when installing the motherboard
- Wear a grounding strap attached to a grounded device to avoid damage from static electricity
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard
- Leave components in the static-proof bags they came in
- Hold all circuit boards by the edges. Do not bend circuit boards

Choosing a Computer Case

There are many types of computer cases on the market. The motherboard complies with the specifications for the micro ATX system case. Some features on the motherboard are implemented by cabling connectors on the motherboard to indicators and switches on the system case. Make sure that your case supports all the features required.

Most cases have a choice of I/O templates in the rear panel. Make sure that the I/O template in the case matches the I/O ports installed on the rear edge of the motherboard.

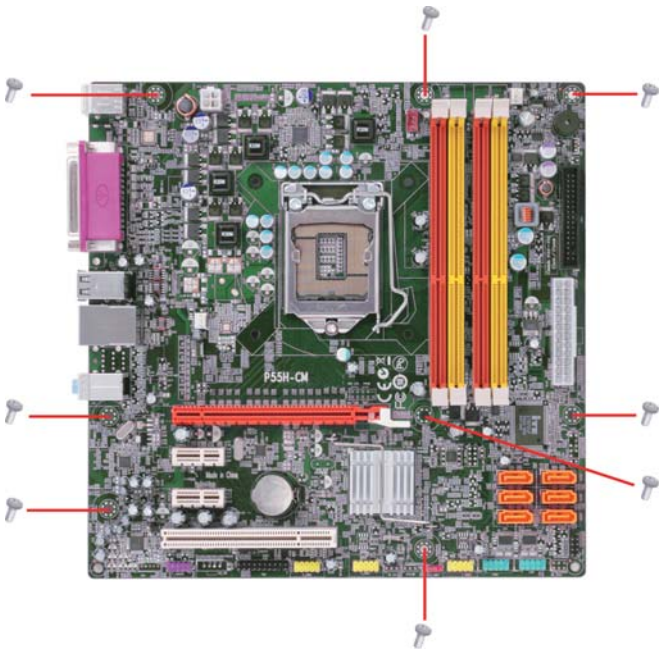
This motherboard carries a micro ATX form factor of 244 x 244 mm. Choose a case that accommodates this form factor.

Installing the Motherboard in a Case

Refer to the following illustration and instructions for installing the motherboard in a case.

Most system cases have mounting brackets installed in the case, which correspond the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.

Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your motherboard.



Do not over-tighten the screws as this can stress the motherboard.

Checking Jumper Settings

This section explains how to set jumpers for correct configuration of the motherboard.

Setting Jumpers

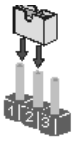
Use the motherboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

The illustrations show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.

SHORT

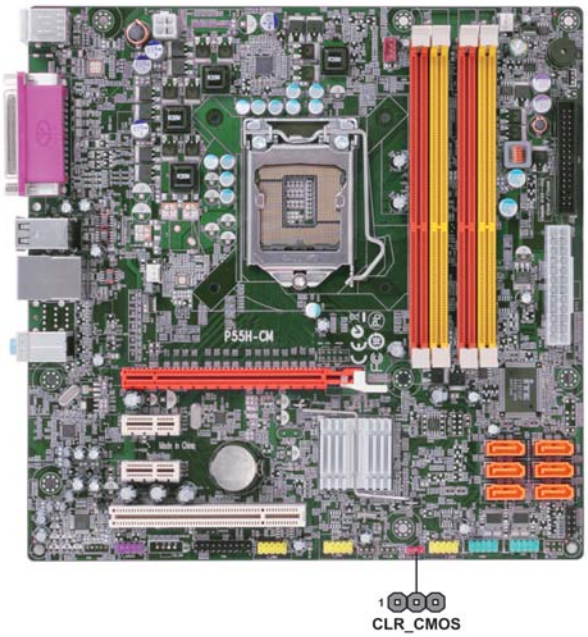
OPEN

This illustration shows a 3-pin jumper. Pins 1 and 2 are SHORT.



Checking Jumper Settings

The following illustration shows the location of the motherboard jumpers. Pin 1 is labeled.



Jumper Settings

Jumper	Type	Description	Setting (default)	
CLR_CMOS	3-pin	Clear CMOS	1-2: NORMAL 2-3: CLEAR CMOS Before clearing the CMOS, make sure to turn off the system.	1 CLR_CMOS

To avoid the system unstability after clearing CMOS, we recommend users to enter the main BIOS setting page to "Load Default Settings" and then "Save and Exit Setup".

Installing Hardware

Installing the Processor

Caution: When installing a CPU heatsink and cooling fan make sure that you DO NOT scratch the motherboard or any of the surface-mount resistors with the clip of the cooling fan. If the clip of the cooling fan scrapes across the motherboard, you may cause serious damage to the motherboard or its components.

On most motherboards, there are small surface-mount resistors near the processor socket, which may be damaged if the cooling fan is carelessly installed.

Avoid using cooling fans with sharp edges on the fan casing and the clips. Also, install the cooling fan in a well-lit work area so that you can clearly see the motherboard and processor socket.

Before installing the Processor

This motherboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change the settings in the system Setup Utility. We strongly recommend that you do not over-clock processors or other components to run faster than their rated speed.

Warning:

1. Over-clocking components can adversely affect the reliability of the system and introduce errors into your system. Over-clocking can permanently damage the motherboard by generating excess heat in components that are run beyond the rated limits.

2. Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.

This motherboard has an LGA1156 socket. When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.

CPU Installation Procedure

The following illustration shows CPU installation components.

A. Opening of the Load Plate
- Put your thumb on the tail of the load plate and press the tail down.
- Rotate the load plate to fully open position.

B. Disengaging of the Load Lever
- Hold the hook of lever and pull it to the left side to clear retention tab.
- Rotate the load lever to fully open position.

C. Removing the Cap
- Be careful not to touch the contact at any time.

D. Inserting the Package
- Grasp the package. Ensure to grasp on the edge of the substrate.
- Make sure pin 1 indicator is on your bottom-left side.
- Aim at the socket and place the package carefully into the socket by purely vertical motion.

E. Closing the Load Plate
- Rotate the load plate onto the package IHS (Intergraded Heat Spreader).
- Engage the load lever while pressing down lightly onto the load plate.
- Secure the load lever with the hook under retention tab.

F. Fasten the cooling fan supporting base onto the CPU socket on the motherboard.

G. Make sure the CPU fan is plugged to the CPU fan connector. Please refer to the CPU cooling fan user's manual for more detail installation procedure.

1. To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 3800 rpm at least. CPU fan and heatsink installation procedures may vary with the type of CPU fan/ heatsink supplied. The form and size of fan/heatsink may also vary.

2. DO NOT remove the CPU cap from the socket before installing a CPU.

3. Return Material Authorization (RMA) requests will be accepted only if the motherboard comes with the cap on the LGA1156 socket.

Installing Memory Modules

This motherboard accommodates four memory modules. It can support four 240-pin DDR3 1333/1066. The total memory capacity is 16 GB.

DDR3 SDRAM memory module table

Memory module	Memory Bus
DDR3 1066	***533 MHz***
DDR3 1333	***667 MHz***

You must install at least one module in any of the four slots. Total memory capacity is 16 GB.

The four DDR3 memory sockets (DDR3_1, DDR3_2, DDR3_3 and DDR3_4) are divided into two channels and each channel has two memory sockets as following:

- Channel A: DDR3_1, DDR3_2
- Channel B: DDR3_3, DDR3_4

Recommend memory configuration

Mode	Sockets			
	DDR3_1	DDR3_2	DDR3_3	DDR3_4
2 DIMMs	-	Populated	-	Populated
3 DIMMs		Populated	Populated	Populated
3 DIMMs	Populated	Populated		Populated
4 DIMMs	Populated	Populated	Populated	Populated

Due to Intel CPU spec definition, the system will not boot if only one DIMM is installed in DDR3_1 or DDR3_3. Follow the table above for recommended memory configuration.

1. For best performance and compatibility, we recommend that users give priority to the yellow DIMMs (DDR3_2/DDR3_4) when installing DIMMs.

2. We suggest users not mix memory type. It is recommended to use the same brand and type memory on this motherboard.

Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.

Installation Procedure

Refer to the following to install the memory modules.

1. This motherboard supports unbuffered DDR3 SDRAM .
2. Push the latches on each side of the DIMM slot down.
3. Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.
4. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
5. Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
6. Install any remaining DIMM modules.

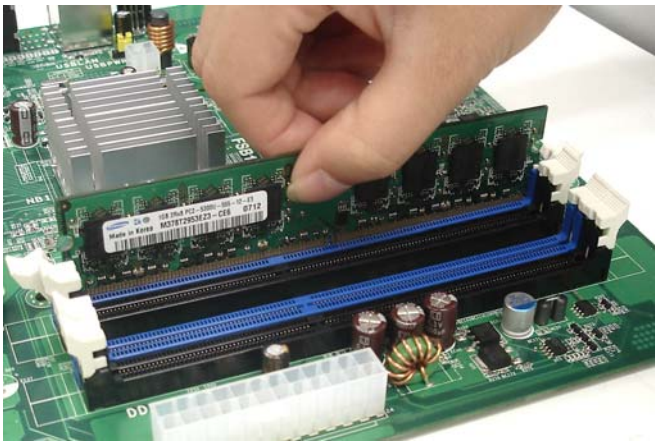


Table A: DDR3 (memory module) QVL (Qualified Vendor List)

The following DDR3 1800/1600/1333/1066 memory modules have been tested and qualified for use with this motherboard.

Type	Size	Vendor	Module Name
DDR3 1066	512MB	ELPIDA	PC3-8500U-7-00-AP
		Hynix	HYMT164U64ZNF8-G8 AA
		Micron	MT4JTF6464AY-1G1B1
	1GB	A-data	M3OSS3H3I3120B5Z
		Aeneon	AEH760UD00-10FA98X
		Corsair	CM3X1024-1066C7
		Hynix	HYMT112U64ZNF8-G8 AA
			HMT112U6AFP8C-G7N0 AA
		Kingston	KVR1066D3N7/1G
		Micron	MT8JTF12864AY-1G1D1
			MT8JTF12864AY-1G1D1
		Qimonda	IMSH1GU03A1F1C-10G B2S81427034
			IMSH1GU03A1F1C-10F B2S81427023
		Ramaxel	RMR1810NA48E7F-1066-LF
		Samsung	Golden Bar M378B2873DZ1-CF8 0818
	2 GB	Hynix	HYMT125U64ZNF8-G8 AA
			HMT125U6AFP8C-G7N0 AA
		Micron	MT16JTF25664AY-1G1D1
			MT16JTF25664AY-1G1D1
		Qimonda	IMSH2GU13A1F1C-10F B3S81427044
			IMSH2GU13A1F1C-10G B3S81528005
		Samsung	M378B5673DZ1-CF8 0842
DDR3 1333	1 GB	A-data	AD31333001GOU(AD63I1A08)
		Aeneon	AXH760UD00-13GA98X
		Apacer	AHU02GFA33C9N1C
		Hynix	HMT112U6AFP8C-H9N0 AA
		KingMax	FLFD45F-B8KG9 NAES
		Kingston	KVR1333D3N9/1G
		Micron	MT8JTF12864AY-1G4D1
		Qimonda	IMSH1GU13A1F1C-13H
		Ramaxel	RMR1810KD48E7F-1333
		Samsung	M378B2873EH1-CH9
		Samsung	M378B2873DZ1-CH9
	2 GB	A-data	AD31333002GOU(AD63I1B16)
		Elixir	M2F2G64CB8HA4N-CG 0903.TW
		Hynix	HMT125U6AFP8C-H9N0 AA
		KingMax	FLFE85F-B8KG9 NEES
		Kingston	KVR1333D3N9/2G
		Micron	MT16JTF25664AY-1G4D1
		Qimonda	IMSH2GU13A1F1C-13H B3S81124001
		Samsung	M378B5673EH1-CH9

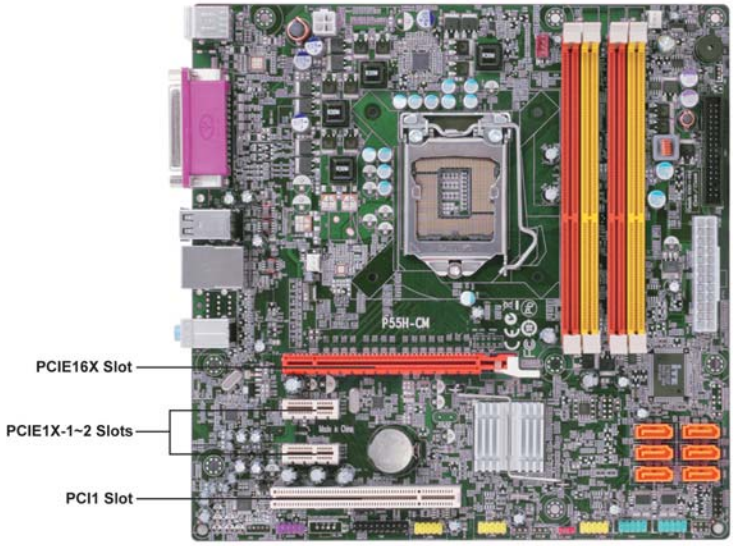
Type	Size	Vendor	Module Name
DDR3 1600	1GB	Kingston	KHX12800D3K3/3GX
DDR3 1800	1 GB	KingMax	KHX14400D3K3/3GX

User please be noted that DDR3 1800/1600 MHz is validated to run at 1333Mhz only.

Expansion Slots

Installing Add-on Cards

The slots on this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware that performs tasks that are not part of the basic system.



PCI1 Slot This motherboard is equipped with one standard PCI slot. PCI stands for Peripheral Component Interconnect and is a bus standard for expansion cards, which for the most part, is a supplement of the older ISA bus standard. The PCI slot on this board are PCI v2.3 compliant.

PCIEX16 Slots The PCI Express x16 slot is used to install an external PCI Express graphics card that is fully compliant to the PCI Express Base Specification revision 2.0.

PCIE1X-1~2 Slots The PCI Express x1 slots are fully compliant to the PCI Express Base Specification revision 2.0.

Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.

Follow these instructions to install an add-on card:

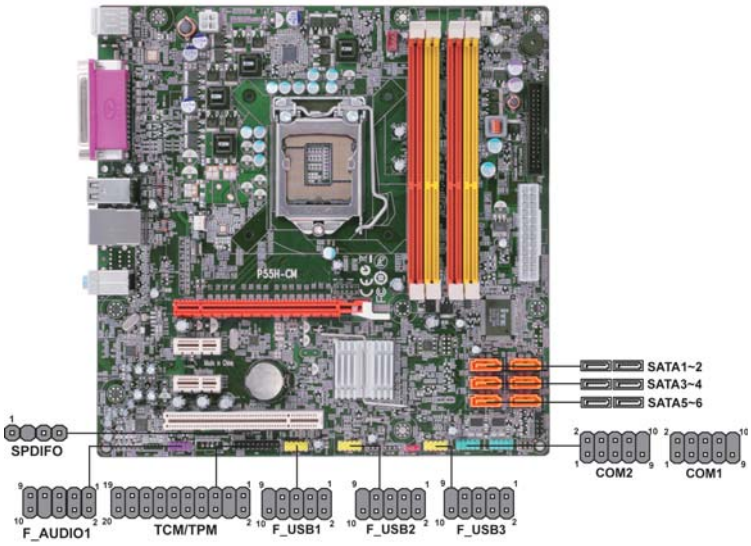
1 Remove a blanking plate from the system case corresponding to the slot you are going to use.
2 Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.
3 Secure the metal bracket of the card to the system case with a screw.

1. For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

2. The onboard PCI interface does not support 64-bit SCSI cards.

Connecting Optional Devices

Refer to the following for information on connecting the motherboard's optional devices:



F_AUDIO1: Front Panel Audio header

This header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access.

Pin	Signal Name	Pin	Signal Name
1	PORT 1L	2	AUD_GND
3	PORT 1R	4	PRESENCE#
5	PORT 2R	6	SENSE1_RETURN
7	SENSE_SEND	8	KEY
9	PORT 2L	10	SENSE2_RETURN

SATA1~6: Serial ATA connectors

These connectors are used to support the Serial ATA devices for the highest data transfer rates (3.0 Gb/s), simpler disk drive cabling and easier PC assembly. It eliminates limitations of the current Parallel ATA interface. But maintains register compatibility and software compatibility with Parallel ATA.

Pin	Signal Name	Pin	Signal Name
1	Ground	2	TX+
3	TX-	4	Ground
5	RX-	6	RX+
7	Ground	-	-

F_USB1~3: Front Panel USB headers

The motherboard has eight USB ports installed on the rear edge I/O port array. Additionally, some computer cases have USB ports at the front of the case. If you have this kind of case, use auxiliary USB connector to connect the front-mounted ports to the motherboard.

Pin	Signal Name	Function
1	USBPWR	Front Panel USB Power
2	USBPWR	Front Panel USB Power
3	USB_FP_P0-	USB Port 0 Negative Signal
4	USB_FP_P1-	USB Port 1 Negative Signal
5	USB_FP_P0+	USB Port 0 Positive Signal
6	USB_FP_P1+	USB Port 1 Positive Signal
7	GND	Ground
8	GND	Ground
9	Key	No pin
10	USB_FP_OC0	USBOC-

Please make sure that the USB cable has the same pin assignment as indicated above. A different pin assignment may cause damage or system hang-up.

SPDIFO: SPDIF out header

This is an optional header that provides an SPDIFO (Sony/Philips Digital Interface) output to digital multimedia device through optical fiber or coaxial connector.

Pin	Signal Name
1	+5V
2	NC
3	SPDIFOUT
4	GND

TCM/TPM: Trusted Cryptography Module/TPM module header

This header allows user to protect the PC from impermissible visit.

Pin	Signal Name	Pin	Signal Name
1	CK_P_33M_TPM	2	GND
3	FWH4	4	NC
5	PCIRST_L1	6	SMBDATA
7	PCIRST_L1	8	FWH2
9	VCC3	10	FWH1
11	FWH0	12	GND
13	NC	14	NC
15	3VSBY	16	SIRQ
17	GND	18	GND
17	LPCPD_L	20	SMBCLK

COM1~2: Onboard serial port headers

Connect a serial port extension bracket to this header to add a second serial port to your system.

Pin	Signal Name	Function
1	DCDB	Data carry detect
2	NSINB	Serial Data In
3	NSOUTB	Serial Data Out
4	DTRB	Data terminal ready
5	GND	Ground
6	DSRB	Date set ready
7	RTSB	Request to send
8	CTSB	Clear to send
9	RI	Ring Indicator
10	Key	No pin

CASEOPEN: Chassis Intrusion Detect Header

This detects if the chassis cover has been removed. This function needs a chassis equipped with instrusion detection switch and needs to be enabled in BIOS.

Pin 1-2	Function
Short	Chassis cover is removed
Open	Chassis cover is closed

Installing a Hard Disk Drive/CD-ROM/SATA Hard Drive

This section describes how to install IDE devices such as a hard disk drive and a CD-ROM drive.

About SATA Connectors

Your motherboard features six SATA connectors supporting a total of six drives. SATA refers to Serial ATA (Advanced Technology Attachment) is the standard interface for the IDE hard drives which are currently used in most PCs. These connectors are well designed and will only fit in one orientation. Locate the SATA connectors on the motherboard and follow the illustration below to install the SATA hard drives.

Installing Serial ATA Hard Drives

To install the Serial ATA (SATA) hard drives, use the SATA cable that supports the Serial ATA protocol. This SATA cable comes with a SATA power cable. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.

SATA cable (optional)

SATA power cable (optional)

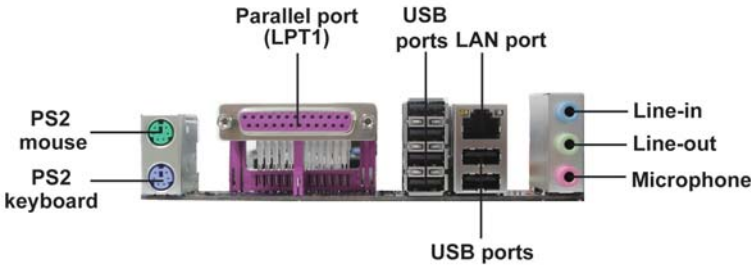
Refer to the illustration below for proper installation:

1 Attach either cable end to the connector on the motherboard.
2 Attach the other cable end to the SATA hard drive.
3 Attach the SATA power cable to the SATA hard drive and connect the other end to the power supply.

This motherboard supports the "Hot-Plug" function.

Connecting I/O Devices

The backplane of the motherboard has the following I/O ports:

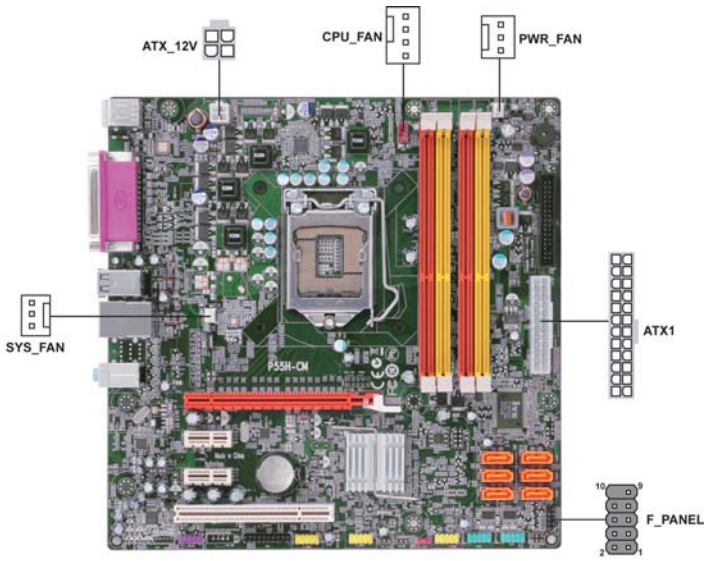


PS2 Mouse	Use the upper PS/2 port to connect a PS/2 pointing device.
PS2 Keyboard	Use the lower PS/2 port to connect a PS/2 keyboard.
Parallel Port (LPT1)	Use LPT to connect printers or other parallel communica tions devices.
LAN Port	Connect an RJ-45 jack to the LAN port to connect your computer to the Network.
USB Ports	Use the USB ports to connect USB devices.
Audio Ports	Use the three audio ports to connect audio devices. The first jack is for stereo line-in signal. The second jack is for stereo line-out signal. The third jack is for microphone.

Connecting Case Components

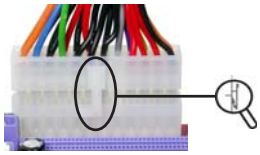
After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

1. Connect the CPU cooling fan cable to **CPU_FAN**.
2. Connect the system cooling fan connector to **SYS_FAN**.
3. Connect the power cooling fan connector to **PWR_FAN**.
4. Connect the case switches and indicator LEDs to the **F_PANEL**.
5. Connect the standard power supply connector to **ATX1**.
6. Connect the auxiliary case power supply connector to **ATX_12V**.



Connecting 24-pin power cable

The ATX 24-pin connector allows you to connect to ATX v2.x power supply.

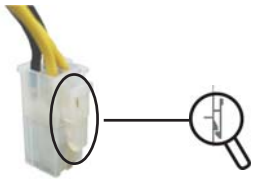


24-pin power cable

With ATX v2.x power supply, users please note that when installing 24-pin power cable, the latches of power cable and the ATX1 match perfectly.

Connecting 4-pin power cable

The ATX_12V power connector is used to provide power to the CPU.



4-pin power cable

When installing 4-pin power cable, the latches of power cable and the ATX_12V match perfectly.

CPU_FAN: CPU cooling FAN Power Connector

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor
4	PWM	PWM

Users please note that the fan connector supports the CPU cooling fan of 1.1A ~ 2.2A (26.4W max) at +12V.

SYS_FAN/PWR_FAN: FAN Power Connectors

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor

ATX1: ATX 24-pin Power Connector

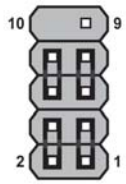
Pin	Signal Name	Pin	Signal Name
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	Ground	15	Ground
4	+5V	16	PS_ON
5	Ground	17	Ground
6	+5V	18	Ground
7	Ground	19	Ground
8	PWRGD	20	-5V
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	Ground

ATX_12V: ATX 12V Power Connector

Pin	Signal Name	Pin	Signal Name
1	Ground	5	+12V
2	Ground	6	+12V
3	Ground	7	+12V
4	Ground	8	+12V

Front Panel Header

The front panel header (F_PANEL) provides a standard set of switch and LED headers commonly found on ATX or Micro ATX cases. Refer to the table below for information:



F_PANEL

Pin	Signal	Function	Pin	Signal	Function
1	HD_LED_P	Hard disk LED(+)	2	FP PWR/SLP	*MSG LED(+)
3	HD_LED_N	Hard disk LED(-)	4	FP PWR/SLP	*MSG LED(-)
5	RST_SW_N	Reset Switch(-)	6	PWR_SW_P	Power Switch(+)
7	RST_SW_P	Reset Switch(+)	8	PWR_SW_N	Power Switch(-)
9	RSVD	Reserved	10	Key	No pin

***** *MSG LED (dual color or single color)*

Hard Drive Activity LED

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

Power/Sleep/Message waiting LED

Connecting pins 2 and 4 to a single or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

Reset Switch

Supporting the reset function requires connecting pin 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

Power Switch

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal de-bounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

This concludes Chapter 2. The next chapter covers the BIOS.

Chapter 3

Using BIOS

About the Setup Utility

The computer uses the latest "American Megatrends Inc. " BIOS with support for Windows Plug and Play. The CMOS chip on the motherboard contains the ROM setup instructions for configuring the motherboard BIOS.

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power Management features

The settings made in the Setup Utility affect how the computer performs. Before using the Setup Utility, ensure that you understand the Setup Utility options.

This chapter provides explanations for Setup Utility options.

The Standard Configuration

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter in case you need to make any changes in the future.

This Setup Utility should be used:

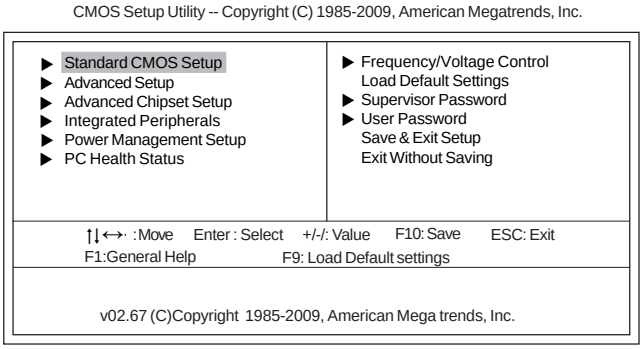
- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security Setup

Entering the Setup Utility

When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

Press DEL to enter SETUP

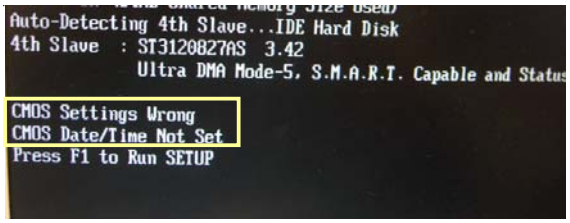
Press the delete key or F1 to access the BIOS Setup Utility.

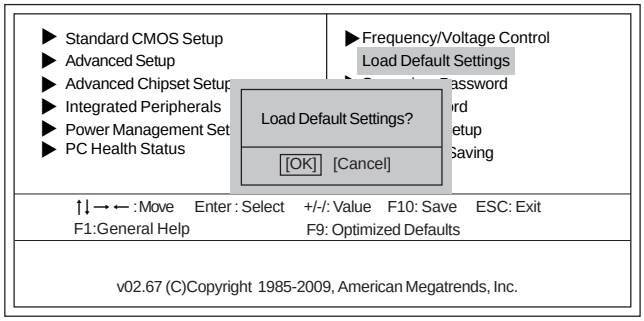

CMOS Setup Utility -- Copyright (C) 1985-2009, American Megatrends, Inc.
▶ Standard CMOS Setup
▶ Advanced Setup
▶ Advanced Chipset Setup
▶ Integrated Peripherals
▶ Power Management Setup
▶ PC Health Status
▶ Frequency/Voltage Control
Load Default Settings
▶ Supervisor Password
▶ User Password
Save & Exit Setup
Exit Without Saving
↑↓↔ :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Load Default settings
v02.67 (C)Copyright 1985-2009, American Mega trends, Inc.

Resetting the Default CMOS Values

When powering on for the first time, the POST screen may show a "CMOS Settings Wrong" message. This standard message will appear following a clear CMOS data at factory by the manufacturer. You simply need to Load Default Settings to reset the default CMOS values.

Note: Changes to system hardware such as different CPU, memories, etc. may also trigger this message.


Auto-Detecting 4th Slave...IDE Hard Disk
4th Slave : ST3120827AS 3.42
Ultra DMA Mode-5, S.M.A.R.T. Capable and Status
CMOS Settings Wrong
CMOS Date/Time Not Set
Press F1 to Run SETUP


CMOS Setup Utility - Copyright (C) 1985-2009, American Megatrends, Inc.
▶ Standard CMOS Setup
▶ Advanced Setup
▶ Advanced Chipset Setup
▶ Integrated Peripherals
▶ Power Management Set
▶ PC Health Status
▶ Frequency/Voltage Control
Load Default Settings
Load Default Settings?
[OK] [Cancel]
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults
v02.67 (C)Copyright 1985-2009, American Megatrends, Inc.

Using BIOS

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ▶) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle ▶.

The default BIOS setting for this motherboard apply for most conditions with optimum performance. We do not suggest users change the default values in the BIOS setup and take no responsibility to any damage caused by changing the BIOS settings.

BIOS Navigation Keys

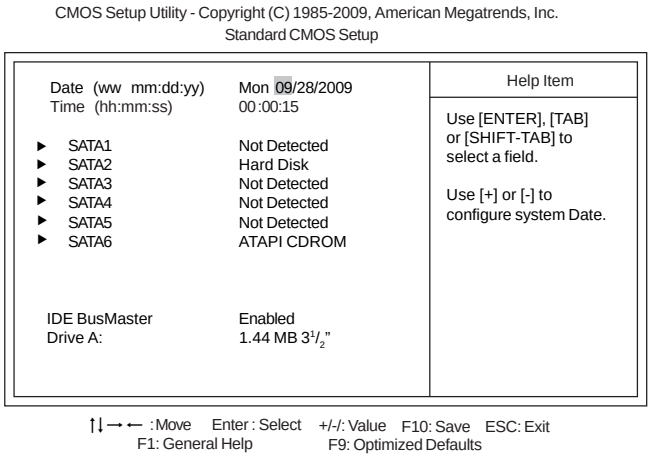
The BIOS navigation keys are listed below:

KEY	FUNCTION
ESC	Exits the current menu
⇅→←	Scrolls through the items on a menu
+/-/	Modifies the selected field's values
Enter	Select
F9	Loads an optimized setting for better performance
F10	Saves the current configuration and exits setup
F1	Displays a screen that describes all key functions

For the purpose of better product maintenance, we reserve the right to change the BIOS items presented in the manual. The BIOS setup screens shown in this chapter are for reference only. Please visit our website for updated manual.

Standard CMOS Setup

This option displays basic information about your system.

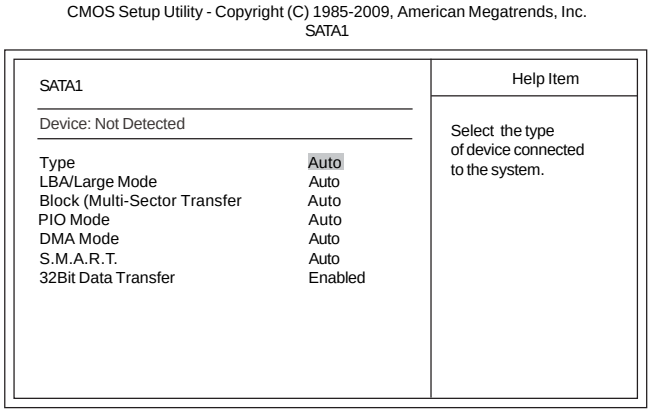

CMOS Setup Utility - Copyright (C) 1985-2009, American Megatrends, Inc.
Standard CMOS Setup
Date (ww mm:dd:yy) Mon 09/28/2009
Time (hh:mm:ss) 00 :00:15
SATA1 Not Detected
SATA2 Hard Disk
SATA3 Not Detected
SATA4 Not Detected
SATA5 Not Detected
SATA6 ATAPI CDROM
IDE BusMaster Enabled
Drive A: 1.44 MB 3 1/2"
Help Item
Use [ENTER], [TAB] or [SHIFT-TAB] to select a field.
Use [+] or [-] to configure system Date.
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1: General Help F9: Optimized Defaults

Date & Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

► SATA1~6

This motherboard supports six SATA channels and each channel allows one SATA device to be installed. Use these items to configure each device on the SATA channel.


CMOS Setup Utility - Copyright (C) 1985-2009, American Megatrends, Inc.
SATA1
SATA1
Device: Not Detected
Type Auto
LBA/Large Mode Auto
Block (Multi-Sector Transfer Auto
PIO Mode Auto
DMA Mode Auto
S.M.A.R.T. Auto
32Bit Data Transfer Enabled
Help Item
Select the type of device connected to the system.
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1: General Help F9: Optimized Defaults

Type (Auto)

Use this item to configure the type of the IDE device that you specify. If the feature is enabled, it will enhance hard disk performance by reading or writing more data during each transfer.

LBA/Large Mode (Auto)

Use this item to set the LAB/Large mode to enhance hard disk performance by optimizing the area the hard disk is visited each time.

Block (Multi-Sector Transfer) (Auto)

If the feature is enabled, it will enhance hard disk performance by reading or writing more data during each transfer.

PIO Mode (Auto)

Use this item to set the PIO mode to enhance hard disk performance by optimizing the hard disk timing.

DMA Mode (Auto)

DMA capability allows user to improve the transfer-speed and data-integrity for compatible IDE devices.

S.M.A.R.T. (Auto)

The S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) system is a diagnostics technology that monitors and predicts device performance. S.M.A.R.T. software resides on both the disk drive and the host computer.

32Bit Data Transfer (Enabled)

Use this item to enable or disable the 32Bit Data Transfer.

Press <Esc> to return to the Standard CMOS Setup page.

IDE BusMaster (Enabled)

This item enables or disables the DMA under DOS mode. We recommend you to leave this item at the default value.

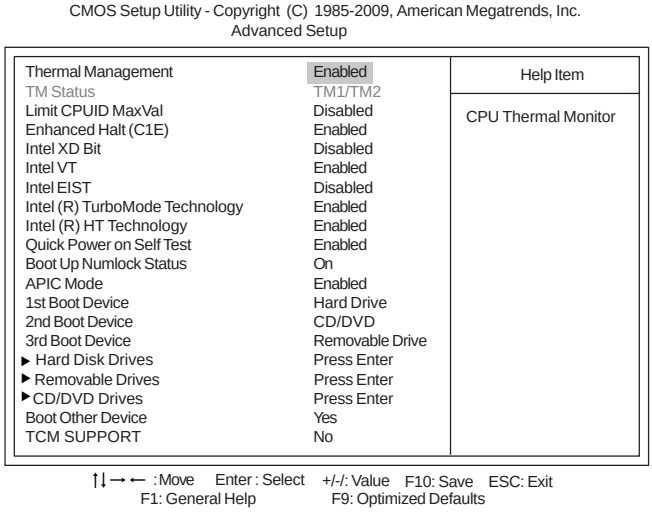
Drive A (1.44 MB 3$^1/_2$")

This item defines the characteristics of any diskette drive attached to the system. You can connect one diskette drive.

Press <Esc> to return to the main menu setting page.

Advanced Setup

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.


CMOS Setup Utility - Copyright (C) 1985-2009, American Megatrends, Inc.
Advanced Setup
Thermal Management Enabled
TM Status TM1/TM2
Limit CPUID MaxVal Disabled
Enhanced Halt (C1E) Enabled
Intel XD Bit Disabled
Intel VT Enabled
Intel EIST Disabled
Intel (R) TurboMode Technology Enabled
Intel (R) HT Technology Enabled
Quick Power on Self Test Enabled
Boot Up Numlock Status On
APIC Mode Enabled
1st Boot Device Hard Drive
2nd Boot Device CD/DVD
3rd Boot Device Removable Drive
▶ Hard Disk Drives Press Enter
▶ Removable Drives Press Enter
▶ CD/DVD Drives Press Enter
Boot Other Device Yes
TCM SUPPORT No
Help Item
CPU Thermal Monitor
↑↓→← : Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1: General Help F9: Optimized Defaults

Thermal Management (Enabled)

This item displays CPU's temperature and enables you to set a safe temperature to Prescott CPU.

TM Status (TM1/TM2)

This item shows TM function status if CPU can support TM function.

Limit CPUID MaxVal (Disabled)

Use this item to enable or disable the Max CPU ID value limit. When supports Prescott and LGA775 CPUs, enables this to prevent the system from "rebooting" when trying to install Windows NT 4.0.

Enhanced Halt (C1E) (Enabled)

This item enables or disables enhanced halt (C1E).

Intel XD Bit (Disabled)

This item allows users to enable or disable the Intel XD bit.

Intel VT (Disabled)

Hardware Virtualization Technology enables processor feature for running multiplesimultaneous Virtual Machines allowing specialized software applications to run infull isolation of each other.

Intel EIST (Enabled)

This item allows users to enable or disable the EIST (Enhanced Intel SpeedStep technology).

Intel (R) TurboMode Technology (Enabled)

This item enables or disables Intel (R) TurboMode Technology support.

Intel (R) HT Technology (Enabled)

This item enables or disables Intel HT Technology support.

Quick Power on Self Test (Enabled)

Enable this item to shorten the power on testing (POST) and have your system start up faster. You might like to enable this item after you are confident that your system hardware is operating smoothly.

Boot Up Numlock Status (On)

This item defines if the keyboard Num Lock key is active when your system is started.

APIC Mode (Enabled)

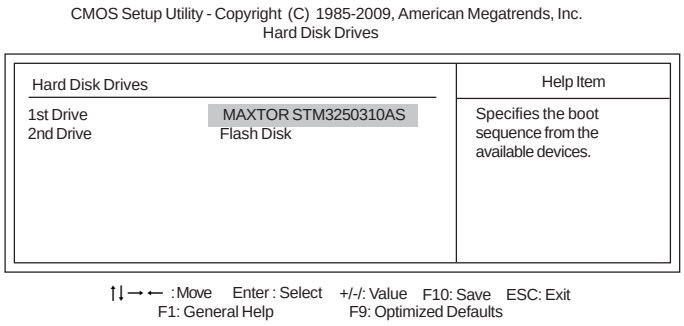
This item allows you to enable or disable the APIC (Advanced Programmable Interrupt Controller) mode. APIC provides symmetric multi-processing (SMP) for systems, allowing support for up to 60 processors.

1st/2nd/3rd Boot Device (Hard Drive/CD/DVD/Removable Drive)

Use this item to determine the device order the computer used to look for an operating system to load at start-up time. The devices showed here will be different depending on the exact devices installed on your motherboard.

►Hard Disk Drives (Press Enter)

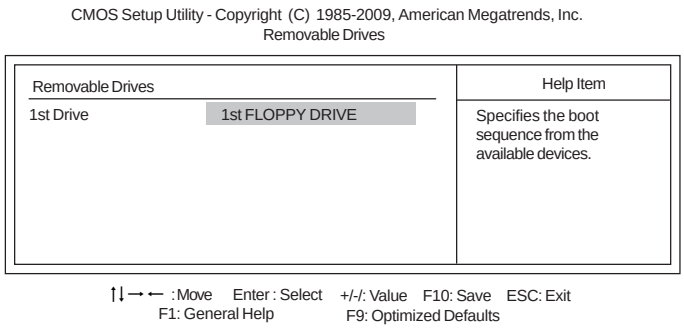
Scroll to this item and press <Enter> to view the following screen:


CMOS Setup Utility - Copyright (C) 1985-2009, American Megatrends, Inc.
Hard Disk Drives
Hard Disk Drives
Help Item
1st Drive
2nd Drive
MAXTOR STM3250310AS
Flash Disk
Specifies the boot sequence from the available devices.
↑↓→← : Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1: General Help
F9: Optimized Defaults

Press <Esc> to return to the Advanced Setup page.

▶Removable Drives (Press Enter)

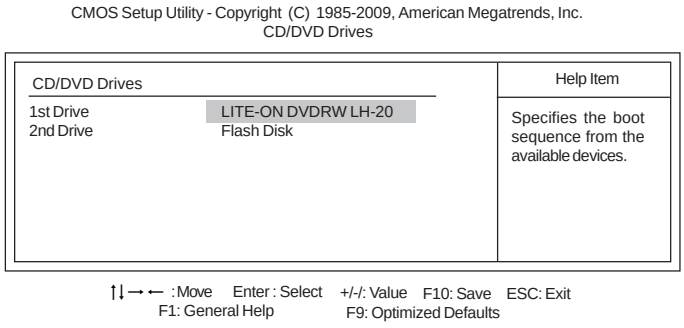
Scroll to this item and press <Enter> to view the following screen:


CMOS Setup Utility - Copyright (C) 1985-2009, American Megatrends, Inc.
Removable Drives
Removable Drives
1st Drive
1st FLOPPY DRIVE
Help Item
Specifies the boot sequence from the available devices.
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1: General Help
F9: Optimized Defaults

Press <Esc> to return to the Advanced Setup page.

▶CD/DVD Drives (Press Enter)

Scroll to this item and press <Enter> to view the following screen:


CMOS Setup Utility - Copyright (C) 1985-2009, American Megatrends, Inc.
CD/DVD Drives
CD/DVD Drives
1st Drive
LITE-ON DVDRW LH-20
2nd Drive
Flash Disk
Help Item
Specifies the boot sequence from the available devices.
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1: General Help
F9: Optimized Defaults

Press <Esc> to return to the Advanced Setup page.

Boot Other Device (Yes)

When enabled, the system searches all other possible locations for an operating system if it fails to find one in the devices specified under the First, Second and Third boot devices.

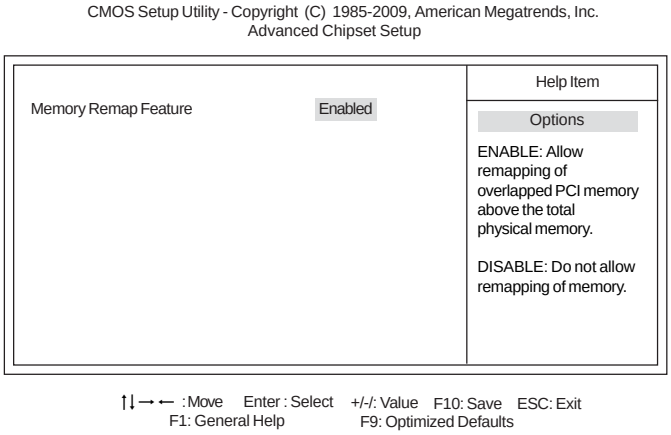
TCM SUPPORT (No)

This item allows user to protect the PC from impermissable visit.

Press <Esc> to return to the main menu setting page.

Advanced Chipset Setup

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.



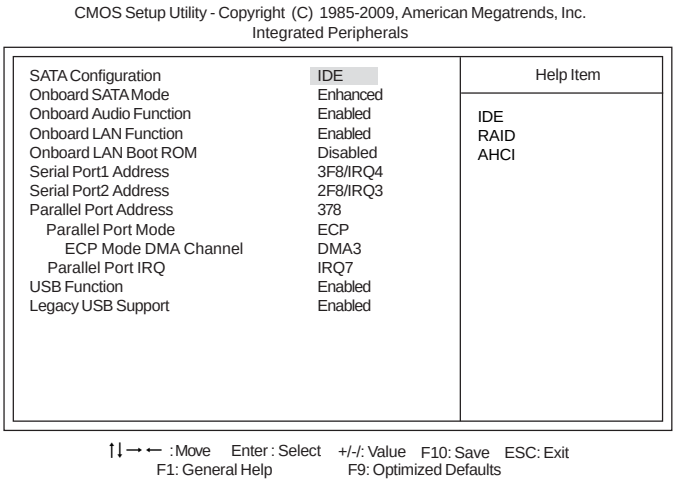
Memory Remap Feature (Enabled)

This item allows you to remap the overlapped PCI memory above the total physical memory if you have a 64 bit OS and 8 GB of RAM.

Press <Esc> to return to the main menu setting page.

Integrated Peripherals

This page sets up some parameters for peripheral devices connected to the system.



SATA Configuration (IDE)

Use this item to select the type of the build-in on-chip Serial ATA.

Onboard SATA Mode (Enhanced)

Use this item to enable or disable the build-in on-chip Serial ATA.

Onboard Audio Function (Enabled)

Use this item to enable or disable the onboard audio device.

Onboard LAN Function (Enabled)

Use this item to enable or disable the onboard LAN function.

Onboard LAN Boot ROM (Disabled)

Use this item to enable or disable the booting from the onboard LAN or a network add-in card with a remote boot ROM installed.

Serial Port1/2 Address (3F8/IRQ42F8/IRQ3)

Use this item to enable or disable the onboard COM1 serial port, and to assign a port address.

Parallel Port Address (378)

Use this item to enable or disable the onboard Parallel port, and to assign a port address.

Parallel Port Mode (ECP)

Use this item to select the parallel port mode. You can select Normal (Standard Parallel Port), ECP (Extended Capabilities Port), EPP (Enhanced Parallel Port), or BPP (Bi-Directional Parallel Port).

ECP Mode DMA Channel (DMA3)

Use this item to assign the DMA Channel under ECP Mode function.

Parallel Port IRQ (IRQ7)

Use this item to assign IRQ to the parallel port.

USB Functions (Enabled)

Use this item to enable or disable the USB function.

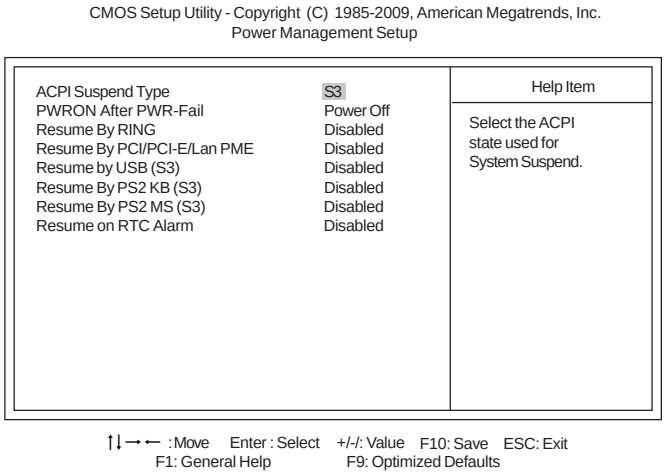
Legacy USB Support (Enabled)

Use this item to enable or disable support for legacy USB devices.

Press <Esc> to return to the main menu setting page.

Power Management Setup

This page sets up some parameters for system power management operation.


CMOS Setup Utility - Copyright (C) 1985-2009, American Megatrends, Inc.
Power Management Setup
ACPI Suspend Type S3
PWRON After PWR-Fail Power Off
Resume By RING Disabled
Resume By PCI/PCI-E/Lan PME Disabled
Resume by USB (S3) Disabled
Resume By PS2 KB (S3) Disabled
Resume By PS2 MS (S3) Disabled
Resume on RTC Alarm Disabled
Help Item
Select the ACPI state used for System Suspend.
↑↓→← : Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1: General Help F9: Optimized Defaults

ACPI Suspend Type (S3)

Use this item to define how your system suspends. In the default, S3, the suspend mode is a suspend to RAM, i.e, the system shuts down with the exception of a refresh current to the system memory.

PWRON After PWR-Fail (Power Off)

This item enables your computer to automatically restart or return to its operating status.

Resume By RING (Disabled)

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

Resume By PCI/PCI-E/Lan PME (Disabled)

These items specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.

Resume By USB (S3) (Disabled)

This item allows you to enable/disable the USB device wakeup function from S3/S4 mode.

Resume By PS2 KB (S3) (Disabled)

This item enables or disables you to allow keyboard activity to awaken the system from power saving mode.

Resume By PS2 MS (S3) (Disabled)

This item enables or disables you to allow mouse activity to awaken the system from power saving mode.

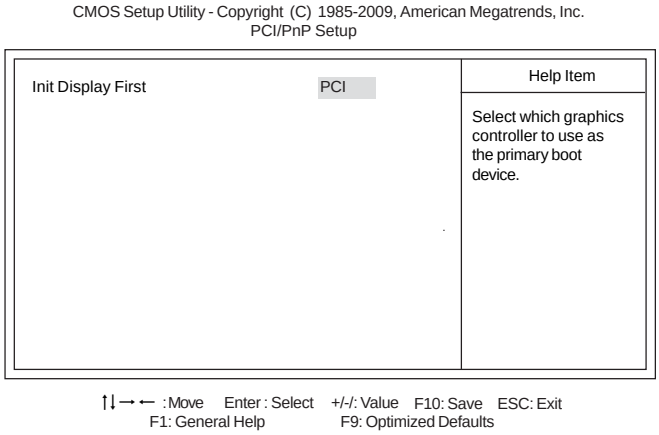
Resume on RTC Alarm (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume at a fixed time based on the system's RTC (realtime clock). Use the items below this one to set the date and time of the wake-up alarm. You must use an ATX power supply in order to use this feature.

Press <Esc> to return to the main menu setting page.

PCI/PnP Setup

This page sets up some parameters for devices installed on the PCI bus and those utilizing the system plug and play capability.


CMOS Setup Utility - Copyright (C) 1985-2009, American Megatrends, Inc.
PCI/PnP Setup
Init Display First
PCI
Help Item
Select which graphics controller to use as the primary boot device.
↑↓→← : Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1: General Help F9: Optimized Defaults

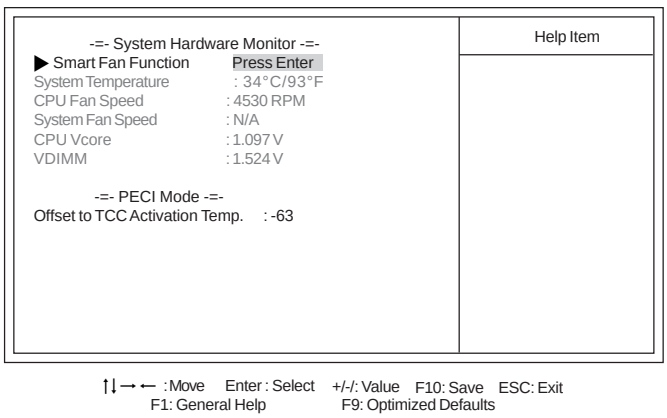
Init Display First (PCI)

Use this item to select which graphics controller to use as the primary boot devices.

Press <Esc> to return to the main menu setting page.

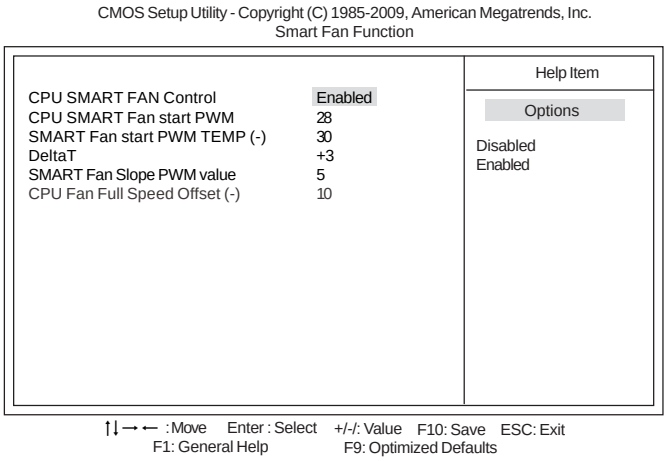
PC Health Status

On motherboards support hardware monitoring, this item lets you monitor the parameters for critical voltages, temperatures and fan speeds.


CMOS Setup Utility - Copyright (C) 1985-2009, American Megatrends, Inc.
PC Health Status
-=- System Hardware Monitor -=-
▶ Smart Fan Function Press Enter
System Temperature : 34°C/93°F
CPU Fan Speed : 4530 RPM
System Fan Speed : N/A
CPU Vcore : 1.097 V
VDIMM : 1.524 V
-=- PECI Mode -=-
Offset to TCC Activation Temp. : -63
Help Item
↑↓→← : Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1: General Help F9: Optimized Defaults

▶Smart Fan Function (Press Enter)

Scroll to this item and press <Enter> to view the following screen:



CPU SMART FAN Control (Enabled)

This item allows you to enable/disable the control of the CPU fan speed by changing the fan voltage.

CPU SMART Fan start PWM (28)

This item is used to set the start PWM value of the CPU smart fan.

SMART Fan start PWM TEMP (-) (30)

This item is used to set the start temperature of the smart fan.

Delta (+3)

This item specifies the range that controls CPU temperature and keeps it fromgoing so high or so low when smart fan works.

SMART Fan Slope PWM value (5)

This item is used to set the Slope Select PWM of the smart fan.

CPU Fan Full Speed Offset (-) (10)

This item is used to set the CPU fan full speed offset value.

Press <Esc> to return to the PC Health Status page.

System Component Characteristics

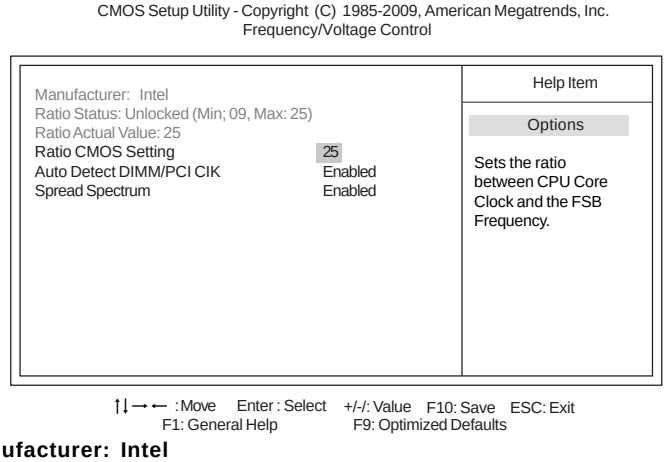
These items display the monitoring of the overall inboard hardware health events, such as System & CPU temperature, CPU & DIMM voltage, CPU & system fan speed,...etc.

- System Temperature
- CPU Fan Speed
- System Fan Speed
- CPU Vcore
- VDIMM

Press <Esc> to return to the main menu setting page.

Frequency/Voltage Control

This page enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.


CMOS Setup Utility - Copyright (C) 1985-2009, American Megatrends, Inc.
Frequency/Voltage Control
Manufacturer: Intel
Ratio Status: Unlocked (Min; 09, Max: 25)
Ratio Actual Value: 25
Ratio CMOS Setting 25
Auto Detect DIMM/PCI CIK Enabled
Spread Spectrum Enabled
Help Item
Options
Sets the ratio between CPU Core Clock and the FSB Frequency.
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1: General Help F9: Optimized Defaults

Manufacturer: Intel

This item displays the information of current manufacturer of the CPU installed in your computer.

Ratio Status: Unlocked (Min: 09, Max: 25)

This item shows the actual ratio of the CPU installed in your system.

Ratio Actual Value: 25

This item shows the actual ratio of the CPU installed in your system.

Ratio CMOS Setting: 25

This item is used to set the CPU Frequency.

Auto Detect DIMM/PCI Clk (Enabled)

When this item is enabled, BIOS will disable the clock signal of free DIMM/PCI slots.

Spread Spectrum (Enabled)

If you enable spread spectrum, it can significantly reduce the EMI (Electro-Magnetic Interference) generated by the system.

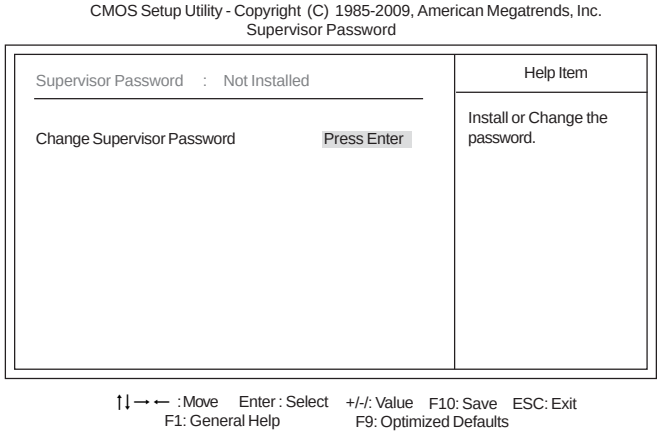
Press <Esc> to return to the main menu setting page.

Load Default Settings

This option opens a dialog box that lets you install stability-oriented defaults for all appropriate items in the Setup Utility. Select <OK> and then press <Enter> to install the defaults. Select <Cancel> and then press <Enter> to not install the defaults.

Supervisor Password

This page helps you install or change a password.


CMOS Setup Utility - Copyright (C) 1985-2009, American Megatrends, Inc.
Supervisor Password
Supervisor Password : Not Installed
Change Supervisor Password
Press Enter
Help Item
Install or Change the password.
↑↓→← : Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1: General Help
F9: Optimized Defaults

Supervisor Password (Not Installed)

This item indicates whether a supervisor password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

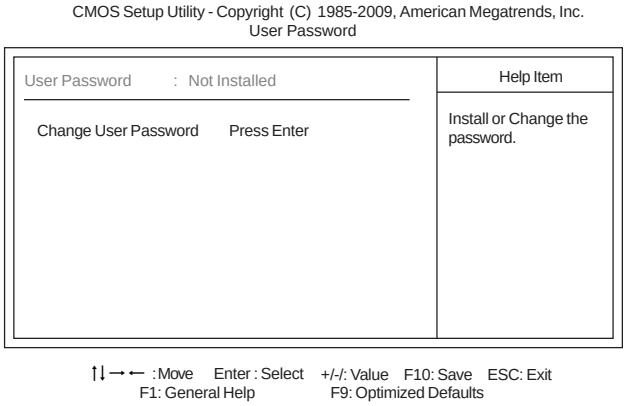
Change Supervisor Password (Press Enter)

You can select this option and press <Enter> to access the sub menu. You can use the sub menu to change the supervisor password.

Press <Esc> to return to the main menu setting page.

User Password

This page helps you install or change a password.


CMOS Setup Utility - Copyright (C) 1985-2009, American Megatrends, Inc.
User Password
User Password : Not Installed
Change User Password Press Enter
Help Item
Install or Change the password.
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1: General Help F9: Optimized Defaults

User Password (Not Installed)

This item indicates whether a user password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

Change User Password (Press Enter)

You can select this option and press <Enter> to access the sub menu. You can use the sub menu to change the user password.

Press <Esc> to return to the main menu setting page.

Save & Exit Setup

Highlight this item and press <Enter> to save the changes that you have made in the Setup Utility and exit the Setup Utility. When the Save and Exit dialog box appears, select [OK] to save and exit, or select [Cancel] to return to the main menu.

Exit Without Saving

Highlight this item and press <Enter> to discard any changes that you have made in the Setup Utility and exit the Setup Utility. When the Exit Without Saving dialog box appears, select [OK] to discard changes and exit, or select [Cancel] to return to the main menu.

*If you have made settings that you do not want to save, use the "*Exit Without Saving*" item and select [OK] to discard any changes you have made.*

Updating the BIOS

You can download and install updated BIOS for this motherboard from the manufacturer's Web site. New BIOS provides support for new peripherals, improvements in performance, or fixes for known bugs. Install new BIOS as follows:

1. If your motherboard has a BIOS protection jumper, change the setting to allow BIOS flashing.
2. If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten.)
3. Prepare a bootable device or create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)
4. Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the bootable device.
5. Turn off your computer and insert the bootable device in your computer. (You might need to run the Setup Utility and change the the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the bootable device first.)
6. At the C:\ or A:\ prompt, type the Flash Utility program name and the file name of the new BIOS and then press <Enter>. Example: AFUDOS.EXE 040706.ROM
7. When the installation is complete, remove the bootable device from the computer and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten. The computer will restart automatically.

This concludes Chapter 3. Refer to the next chapter for information on the software supplied with the motherboard.

Memo

Chapter 4
Using the Motherboard Software

About the Software DVD-ROM/CD-ROM

The support software DVD-ROM/CD-ROM that is included in the motherboard package contains all the drivers and utility programs needed to properly run the bundled products. Below you can find a brief description of each software program, and the location for your motherboard version. More information on some programs is available in a README file, located in the same directory as the software. Before installing any software, always inspect the folder for files named README.TXT or something similar. These files may contain important information that is not included in this manual.

1. *Never try to install all software from folder that is not specified for use with your motherboard.*
2. *The notice of Intel HD audio installation (optional): The Intel High Definition audio functionality unexpectedly quits working in Windows Server 2003 Service Pack 1 or Windows XP Professional x64 Edition. Users need to download and install the update packages from the Microsoft Download Center "before" installing HD audio driver bundled in the Driver disk . Please log on to http://support.microsoft.com/default.aspx?scid=kb;en-us;901105#appliesto for more information.*

Auto-installing under Windows XP/Vista/7

The Auto-install DVD-ROM/CD-ROM makes it easy for you to install the drivers and software for your motherboard.

If the Auto-install DVD-ROM/CD-ROM does not work on your system, you can still install drivers through the file manager for your OS (for example, Windows Explorer). Refer to the Utility Folder Installation Notes later in this chapter.

The support software DVD-ROM/CD-ROM disc loads automatically under Windows XP/Vista/7. When you insert the DVD-ROM/CD-ROM disc in the DVD-ROM/CD-ROM drive, the autorun feature will automatically bring up the install screen. The screen has three buttons on it, Setup, Browse CD and Exit.

If the opening screen does not appear; double-click the file "setup.exe" in the root directory.

Drivers Tab

Setup	Click the **Setup** button to run the software installation program. Select from the menu which software you want to install.
Browse CD	The **Browse CD** button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support disk. Before installing the software from Windows Explorer, look for a file named README.TXT or something similar. This file may contain important information to help you install the software correctly. Some software is installed in separate folders for different operating systems, such as Windows XP/Vista/7. Always go to the correct folder for the kind of OS you are using. In install the software, execute a file named SETUP.EXE by double-clicking the file and then following the instructions on the screen.
Exit	The **EXIT** button closes the Auto Setup window.

Utilities Tab

Lists the software utilities that are available on the disk.

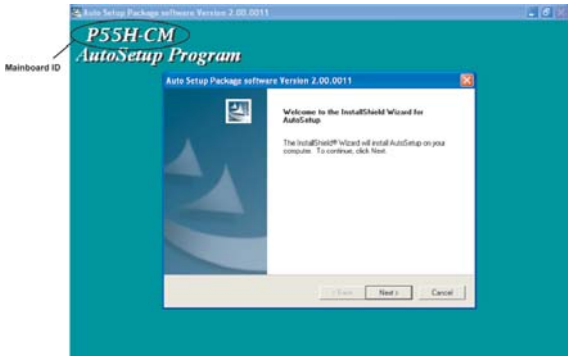
Information Tab

Displays the path for all software and drivers available on the disk.

Running Setup

Follow these instructions to install device drivers and software for the motherboard:

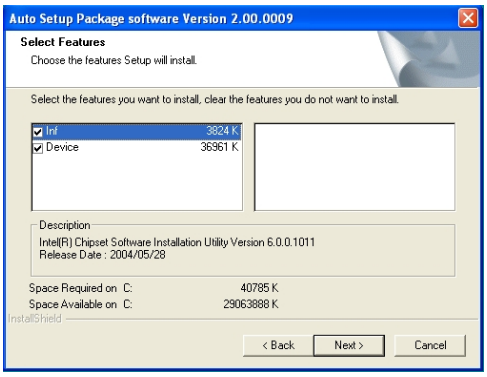
1. *Click **Setup.** The installation program begins:*



The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

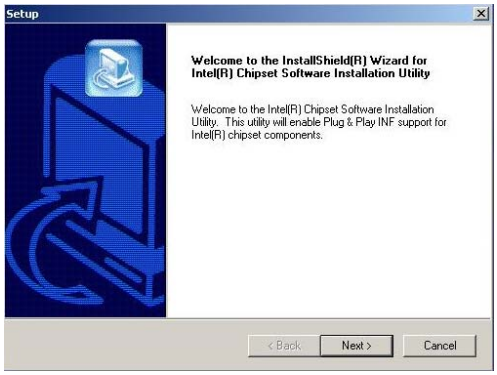
The motherboard identification is located in the upper left-hand corner.

2. *Click **Next.** The following screen appears:*


Auto Setup Package software Version 2.00.0009
Select Features
Choose the features Setup will install.
Select the features you want to install, clear the features you do not want to install.
Inf 3824 K
Device 36961 K
Description
Intel(R) Chipset Software Installation Utility Version 6.0.0.1011
Release Date : 2004/05/28
Space Required on C: 40785 K
Space Available on C: 29063888 K
InstallShield
< Back
Next >
Cancel

3. *Check the box next to the items you want to install. The default options are recommended.*

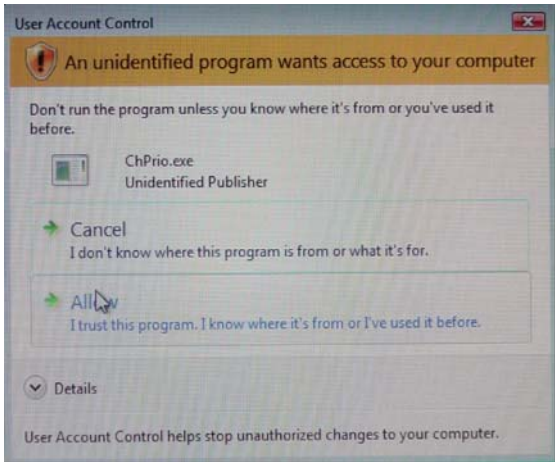
4. *Click **Next** run the Installation Wizard. An item installation screen appears:*


Setup
Welcome to the InstallShield(R) Wizard for Intel(R) Chipset Software Installation Utility
Welcome to the Intel(R) Chipset Software Installation Utility. This utility will enable Plug & Play INF support for Intel(R) chipset components.
< Back
Next >
Cancel

5. *Follow the instructions on the screen to install the items.*

Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

Windows Vista/7 will appear below UAC (User Account Control) message after the system restart. You must select "Allow" to install the next driver. Continue this process to complete the drivers installation.


User Account Control
An unidentified program wants access to your computer
Don't run the program unless you know where it's from or you've used it before.
ChPrio.exe
Unidentified Publisher
Cancel
I don't know where this program is from or what it's for.
Allow
I trust this program. I know where it's from or I've used it before.
Details
User Account Control helps stop unauthorized changes to your computer.

Manual Installation

Insert the disk in the DVD-ROM/CD-ROM drive and locate the PATH.DOC file in the root directory. This file contains the information needed to locate the drivers for your motherboard.

Look for the chipset and motherboard model; then browse to the directory and path to begin installing the drivers. Most drivers have a setup program (SETUP.EXE) that automatically detects your operating system before installation. Other drivers have the setup program located in the operating system subfolder.

If the driver you want to install does not have a setup program, browse to the operating system subfolder and locate the readme text file (README.TXT or README.DOC) for information on installing the driver or software for your operating system.

Utility Software Reference

All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is furnished under license and may only be used or copied in accordance with the terms of the license.

These software(s) are subject to change at anytime without prior notice. Please refer to the support disk for available software.

This concludes Chapter 4.

Chapter 5
Intel® Matrix Storage Manager RAID Configurations

The Intel® Matrix Storage Manager allows you to configure RAID 0, and 1 sets on the external Serial ATA hard disk drives.

Before creating a RAID set

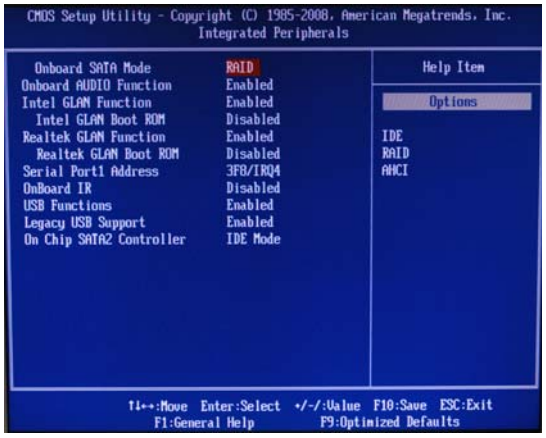
Prepare the following items:

1. One SATA HDD.
2. A write-enabled floppy disk.
3. Microsoft® Windows® OS installation disk (Windows XP/Vista).
4. Motherboard support CD with Intel® Matrix Storage Manager driver.

Complete the following steps before you create a RAID set:

1. Install the external Serial ATA hard disk drive (HDD) on your system.
2. Set the *Onboard SATA Mode* item in the BIOS to *.RAID*..

   See section “Integrated Peripherals” for details.



3. Enter the Intel® Matrix Storage Manager option to set up your RAID configuration.
4. Create an Intel® Matrix Storage Manager driver disk for Windows® OS installation. See section “Creating a RAID driver disk” for details.
5. Install the Intel® Matrix Storage Manager driver after the Windows® OS had been installed.

Entering Intel® Matrix Storage Manager RAID BIOS utility

1. During POST, press <Ctrl-I> to enter the Intel® Matrix Storage Manager RAID BIOS menu.

Intel(R) Matrix Storage Manager option ROM v7.6.0.1011 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
RAID Volumes:
None defined.
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
4 Maxtor 7H500F0 H81D3FLH 465.8GB Non-RAID Disk
5 ST3500320AS 5QM0KLEY 465.8GB Non-RAID Disk
Press <CTRL-I> to enter Configuration Utility...

2. The main Intel® Matrix Storage Manager RAID BIOS menu appears.

3. Use the arrow keys to move the color bar and navigate through the items.

Intel(R) Matrix Storage Manager option ROM v7.6.0.1011 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes:
None defined.
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
4 Maxtor 7H500F0 H81D3FLH 465.8GB Non-RAID Disk
5 ST3500320AS 5QM0KLEY 465.8GB Non-RAID Disk
[↑↓]-Select [ESC]-Exit [ENTER]-Select Menu

Creating a RAID set

1. In the main Intel® Matrix Storage Manager RAID BIOS menu, highlight *Create RAID Volume* using the up/down arrow key then press <Enter>.

2. When the *RAID Level* item is highlighted, use the up/down arrow key to select the RAID set that you want to create.

When more than two HDDs are installed in your computer, the *Disks* item will be selectable. Then users can select the HDD that you want to belong to the RAID set. Please be noticed that selecting a wrong disk will result in losing the original data of the HDD.

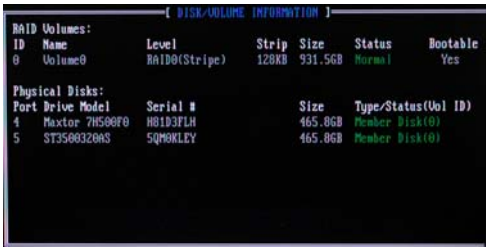
3. Key in the RAID volume capacity. Use the up/down arrow to choose the *Capacity*. The default value indicates the maximum capacity using the selected disks. Entering a lower capacity allows you to create a second volume on these disks.

4. When done, press <Enter> to confirm the creation of the RAID set. A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N>.

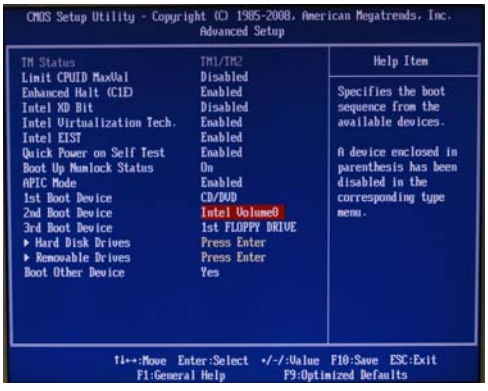
Intel(R) Matrix Storage Manager option ROM v7.6.0.1011 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volume0
RAID Level: RAID0(Stripe)
Disks: Select Disks
Strip Size: 128KB
Capacity: 931.5 GB
WARNING: ALL DATA ON SELECTED DISKS WILL BE LOST.
Are you sure you want to create this volume? (Y/N):
Press ENTER to create the specified volume.
[↑↓]Change [TAB]-Next [ESC]-Previous Menu [ENTER]-Select

Pressing <Y> deletes all the data in the HDDs.

5. The following screen appears, displaying the relevant information about the RAID set you created.


[DISK/VOLUME INFORMATION]
RAID Volumes:
ID Name Level Strip Size Status Bootable
0 Volume0 RAID0(Stripe) 128KB 931.5GB Normal Yes
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
4 Maxtor 7H500F0 H81D3FLH 465.8GB Member Disk(0)
5 ST3500320AS 5QM0KLEY 465.8GB Member Disk(0)

Users please be noted that RAID 0 (Stripe) is set to accelerate the data access, and RAID 1 (Mirror) is set to provide the data backup. If you want to set RAID 0, you need to set the *2nd Boot Device* item in the BIOS to *Intel Volume0*. See section "Advanced Setup" for details.


CMOS Setup Utility - Copyright (C) 1985-2008, American Megatrends, Inc.
Advanced Setup
TM Status TM1/TM2
Limit CPUID MaxVal Disabled
Enhanced Halt (C1E) Enabled
Intel XD Bit Disabled
Intel Virtualization Tech. Enabled
Intel EIST Enabled
Quick Power on Self Test Enabled
Boot Up Numlock Status On
APIC Mode Enabled
1st Boot Device CD/DVD
2nd Boot Device Intel Volume0
3rd Boot Device 1st FLOPPY DRIVE
▸ Hard Disk Drives Press Enter
▸ Removable Drives Press Enter
Boot Other Device Yes
Help Item
Specifies the boot sequence from the available devices.
A device enclosed in parenthesis has been disabled in the corresponding type menu.
↑↓←→:Move Enter:Select +/-/:Value F10:Save ESC:Exit
F1:General Help F9:Optimized Defaults

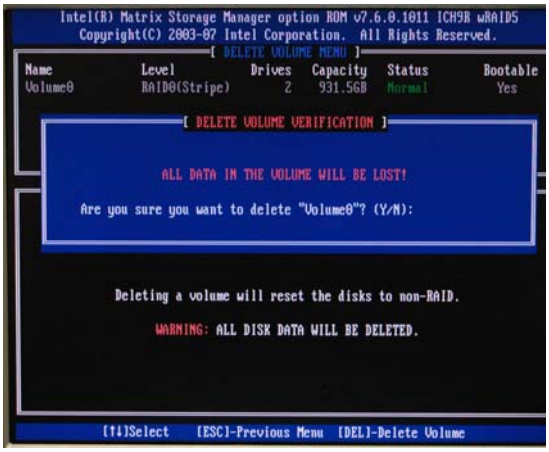
Deleting a RAID set

1. In the main Intel® Matrix Storage Manager RAID BIOS menu, highlight *Delete RAID Volume* using the up/down arrow key then press <Enter>.

2. Use the space bar to select the RAID set you want to delete.

   Press the <Del> key to delete the set.

3. A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N>.


Intel(R) Matrix Storage Manager option ROM v7.6.0.1011 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
[DELETE VOLUME MENU]
Name Level Drives Capacity Status Bootable
Volume0 RAID0(Stripe) 2 931.5GB Normal Yes
[DELETE VOLUME VERIFICATION]
ALL DATA IN THE VOLUME WILL BE LOST!
Are you sure you want to delete "Volume0"? (Y/N):
Deleting a volume will reset the disks to non-RAID.
WARNING: ALL DISK DATA WILL BE DELETED.
[↑↓]Select [ESC]-Previous Menu [DEL]-Delete Volume

Pressing <Y> deletes all the data in the HDDs.

Resetting disks to Non-RAID

An HDD that has been previously configured as part of another RAID set in another platform is called a broken RAID HDD. When you install a broken RAID HDD, you cannot select this disk when configuring a RAID set through the Intel® Matrix Storage Manager option. If you still want to use this broken RAID HDD as part of the RAID set configured through the Intel® Matrix Storage Manager, you may do so by resetting the disk to Non-RAID. You will, however, lose all data and previous RAID configurations.

To reset disks to Non-RAID:

1. In the main Intel® Matrix Storage Manager RAID BIOS menu, highlight *Reset Disks to Non-RAID* using the up/down arrow key then press <Enter>.

2. Use the space bar to select the HDD to reset to Non-RAID.
3. A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N>.

Pressing <Y> deletes all the data in the HDDs.

Exiting Setup

When you have finished, highlight *Exit* using the up/down arrow key then press <Enter> to exit the Intel® Matrix Storage Manager RAID BIOS utility.

A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N> to return to the Intel® Matrix Storage Manager RAID BIOS menu.

Chapter 6
Trouble Shooting

Start up problems during assembly

After assembling the PC for the first time you may experience some start up problems. Before calling for technical support or returning for warranty, this chapter may help to address some of the common questions using some basic troubleshooting tips.

a) System does not power up and the fans are not running.

1.Disassemble the PC to remove the VGA adaptor card, DDR memory, LAN, USB and other peripherals including keyboard and mouse. Leave only the motherboard, CPU with CPU cooler and power supply connected. Turn on again to see if the CPU and power supply fans are running.

2. Make sure to remove any unused screws or other metal objects such as screwdrivers from the inside PC case. This is to prevent damage from short circuit.

3. Check the CPU FAN connector is connected to the motherboard.

4. For Intel platforms check the pins on the CPU socket for damage or bent. A bent pin may cause failure to boot and sometimes permanent damage from short circuit.

5. Check the 12V power connector is connected to the motherboard.

6. Check that the 12V power & ATX connectors are fully inserted into the motherboard connectors. Make sure the latches of the cable and connector are locked into place.

b) Power is on, fans are running but there is no display

1. Make sure the monitor is turned on and the monitor cable is properly connected to the PC.
2. Check the VGA adapter card (if applicable) is inserted properly.
3. Listen for beep sounds. If you are using internal PC speaker make sure it is connected.
   a. continuous 3 short beeps : memory not detected
   b. 1 long beep and 8 short beeps : VGA not detected

c) The PC suddenly shuts down while booting up.

1. The CPU may experience overheating so it will shutdown to protect itself. Ensure the CPU fan is working properly.
2. From the BIOS setting, try to disable the Smartfan function to let the fan run at default speed. Doing a Load Optimised Default will also disable the Smartfan.

Start up problems after prolong use

After a prolong period of use your PC may experience start up problems again. This may be caused by breakdown of devices connected to the motherboard such as HDD, CPU fan, etc. The following tips may help to revive the PC or identify the cause of failure.

1. Clear the CMOS values using the CLR_CMOS jumper. Refer to CLR_CMOS jumper in Chapter 2 for Checking Jumper Settings in this user manual. When completed, follow up with a Load Optimised Default in the BIOS setup.

2. Check the CPU cooler fan for dust. Long term accumulation of dust will reduce its effectiveness to cool the processor. Clean the cooler or replace a new one if necessary.

3. Check that the 12V power & ATX connectors are fully inserted into the motherboard connectors. Make sure the latches of the cable and connector are locked into place.

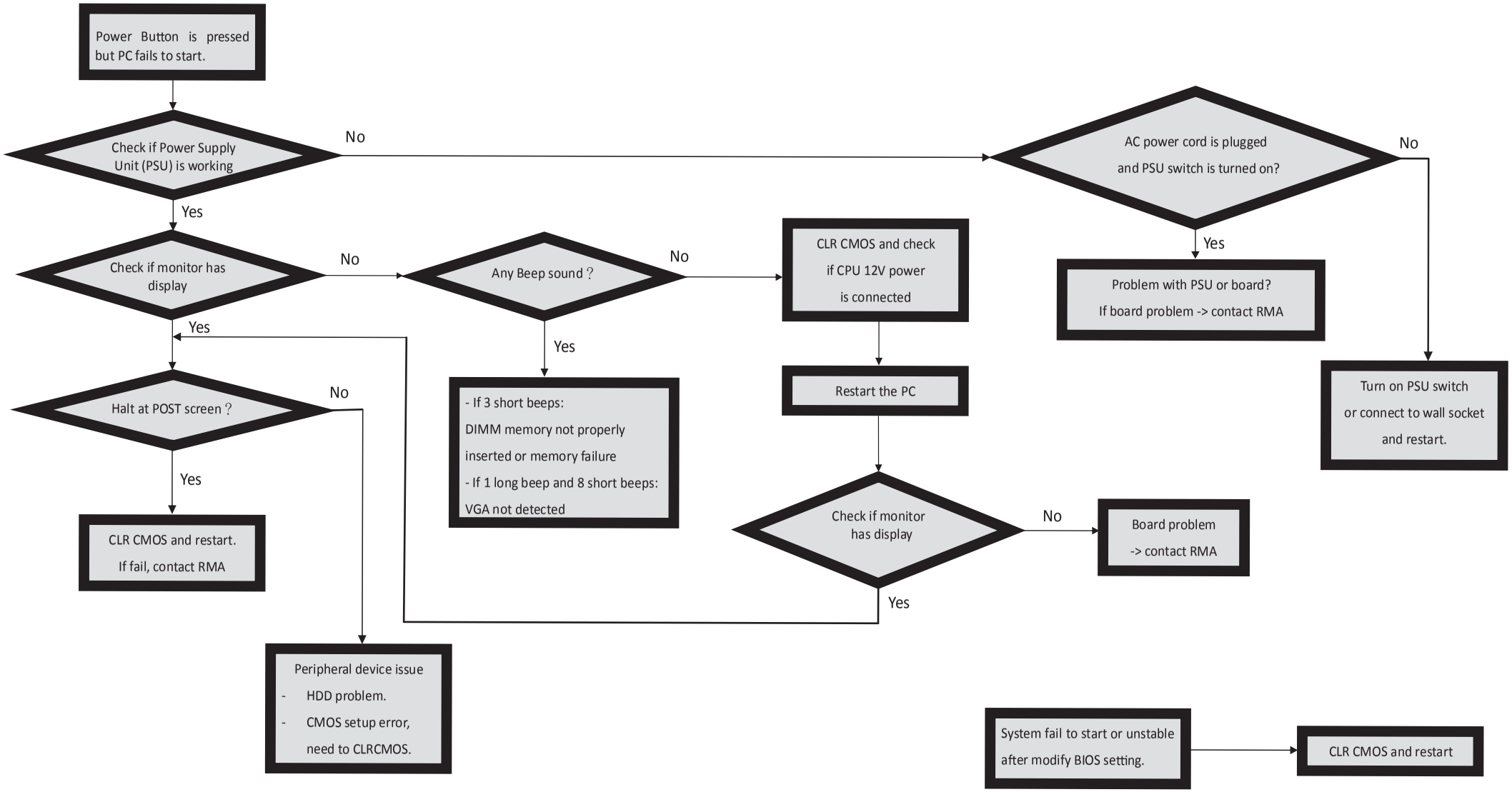
4. Remove the hard drive, optical drive or DDR memory to determine which of these component may be at fault.

Maintenance and care tips

Your computer, like any electrical appliance, requires proper care and maintenance. Here are some basic PC care tips to help prolong the life of the motherboard and keep it running as best as it can.

1. Keep your computer in a well ventilated area. Leave some space between the PC and the wall for sufficient airflow.
2. Keep your computer in a cool dry place. Avoid dusty areas, direct sunlight and areas of high moisture content.
3. Routinely clean the CPU cooler fan to remove dust and hair.
4. In places of hot and humid weather you should turn on your computer once every other week to circulate the air and prevent damage from humidity.
5. Add more memory to your computer if possible. This not only speeds up the system but also reduces the loading of your hard drive to prolong its lifespan.
6. If possible, ensure the power cord has an earth ground pin directly from the wall outlet. This will reduce voltage fluctuation that may damage sensitive devices.

Basic Troubleshooting Flowchart


Power Button is pressed but PC fails to start.
Check if Power Supply Unit (PSU) is working
No
AC power cord is plugged and PSU switch is turned on?
No
Yes
Problem with PSU or board? If board problem -> contact RMA
Turn on PSU switch or connect to wall socket and restart.
Yes
Check if monitor has display
No
Any Beep sound ?
No
CLR CMOS and check if CPU 12V power is connected
Yes
- If 3 short beeps: DIMM memory not properly inserted or memory failure
- If 1 long beep and 8 short beeps: VGA not detected
Restart the PC
Yes
Halt at POST screen ?
No
Yes
CLR CMOS and restart. If fail, contact RMA
Check if monitor has display
No
Board problem -> contact RMA
Yes
Peripheral device issue
- HDD problem.
- CMOS setup error, need to CLRCMOS.
System fail to start or unstable after modify BIOS setting.
CLR CMOS and restart

Memo